Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

but no one knows. And unfortunately such problems do not appeal to the public. We can only live in hope that Charcot may find the wherewithal with which to pursue his investigations in West Antarctica, and that some one will undertake the exploration of Western East Antarctica. If an American Antarctic expedition should ever be thought of again, the region in which further effort would now be most fruitful would be precisely that of Western East Antarctica, between Enderby Land and the South Pole.

Philadelphia, March 20, 1912.

ECONOMIC PROSPECTS OF NEW BRITISH COLUMBIA

BY

FRED. A. TALBOT

Enterprises in British Columbia have hitherto been content chiefly to exploit the mineral and agricultural wealth in the southern part of the province within easy reach of the first Canadian transcontinental railroad. The northern land has commonly been regarded as an inhospitable mountain region capable of little development. Pioneering did not pass beyond the Cariboo gold field district until a few years ago, and even then was attended with considerable hardship and privation.

The physical features of the region were responsible for this neglect. The Canadian Pacific Railway is flanked by the Rocky, Selkirk, and Gold Mountain ranges and a bad bit of alkali plateau where life is quite insupportable. The presence of this narrow but arid belt was sufficient to deter all excepting those interested in mining and prospecting, and kept pioneer farmers from venturing northward. Entrance to the northern land by way of the Fraser River was impossible owing to the cañons and gulches through which the stream rushes at frantic speed, making it unnavigable.

The discovery of gold in the Klondike prompted a few gold seekers to wander from the northern limit of the Cariboo road through the unknown country beyond. Some pushed on from Barkerville, the leading town in the Cariboo gold country, gaining the southern bank of the Fraser River at Giscombe Portage. They crossed the river and then trekked overland for a few miles to Summit Lake, one of the fountain heads of the Peace River, followed the Parsnip River north till it reaches the Peace and then struck out overland to the northwest and Dawson. Others gained the Fraser River at Soda Creek, the south limit of navigation on its upper reaches, and then struck directly northwards. As they advanced they were astonished to find that the interior became a succession of rich fertile valleys. Many of the gold seekers abandoned their journey to the Klondike to settle upon the land, while others, after gaining the goldfields and failing to meet with fortune, retraced their footsteps to the agricultural stretches of New British Columbia, to settle upon the land. The result is that the oldest settlers in this country to-day are Klondike sourdoughs, who have won more wealth from the alluvial soil in the wide depressions among the low hills than they could obtain from the rocks and rivers of the Yukon Territory.

The real opening of the country, however, is coming from the construction of the second trans-continental railroad across Canada—The Grand Trunk Pacific. This line traverses the richest and most promising areas, for the track usually follows the waterways so long as they flow in the desired direction; and as soon as one river is left, another waterway is picked up. The result is that the railroad has a low ruling grade—not exceeding 21 feet per mile—and indeed the summit level between the Yellowhead Pass in the Rocky Mountains and the seaboard at Prince Rupert is approximately the same as that on the prairies between the Yellowhead Pass and Winnipeg.

I spent a part of 1910 crossing through the heart of this country by packhorse and canoe, the journey occupying nearly six months. My purpose was to study the economic possibilities of the country, and its general physical characteristics. At that time the Grand Trunk Pacific had been advanced westwards from Winnipeg to the west limit of the prairie division, and the construction forces were preparing to attack the mountain section. The official boundary between the prairie and mountain divisions is Wolf Creek, just above the junction of this stream with the Mac Leod River, a mile west of the present station of Thornton. Wolf Creek lies at an elevation of 2,855 feet, while the railroad at the Yellowhead Pass, 130 miles beyond, is at 3,720 feet.

Physically, the country changes abruptly at this point. The rolling prairie, with its gentle undulations, gives way to heavy rolling country, low hills of increasing height rise one above the other, and are separated by the winding course of the Mac Leod River. Poplar is interspersed with jack-pine growing in gravelly soil, but there are numerous patches, often of large area, where the cottonwood

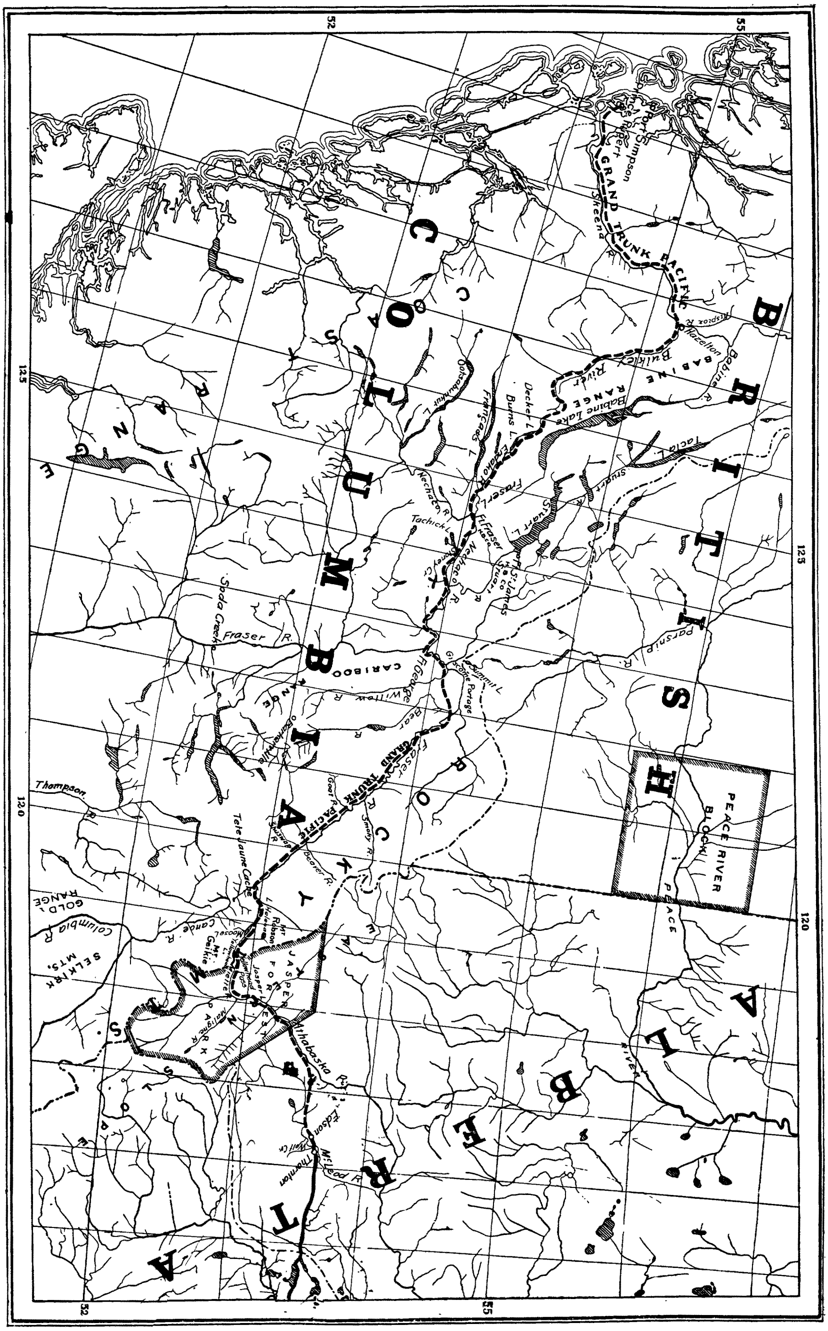

FIG. 1—Sketch Map showing the route of the "Mountain Section" of the Grand Trunk Pacific Railway. Scale 1:6,300,000 (1 in.=100 miles approx.). Based on the Map of Western Canada, 1:217,600, published by the Department of the Interior, Ottawa, 1910.

flourishes luxuriantly, and the dark loamy soil gives every promise of profitable farming. Agriculture here, however, holds out hope of success only to truck farmers, for the surface is too broken to admit of plow cultivation. The hill slopes dropping towards the river in a series of steps, and with a southerly aspect, should prove excellent for fruit farming. The country is well watered, bubbling creeks are found on every hand, and stock-raising should be successful. The upper sides of the hill slopes are covered with a heavy growth of grasses affording fine feed, and the area of these grazing areas can be extended.

The land makes a somewhat steep ascent in the course of the first fifty miles as the Athabaska Divide has to be crossed. As the Divide is climbed the character of the country changes. The whole of these slopes was formerly covered with fine timber, but about forty years ago the trees were destroyed by a fire that devastated over 150 square miles. The result is that the ground is piled with deadfall hidden from view by a high growth of bush. The soil is rocky and for the most part worthless, though it might prove excellent for summer grazing if cleared. Drainage would be required, however; our progress was prolonged by the prevalence of muskeg.

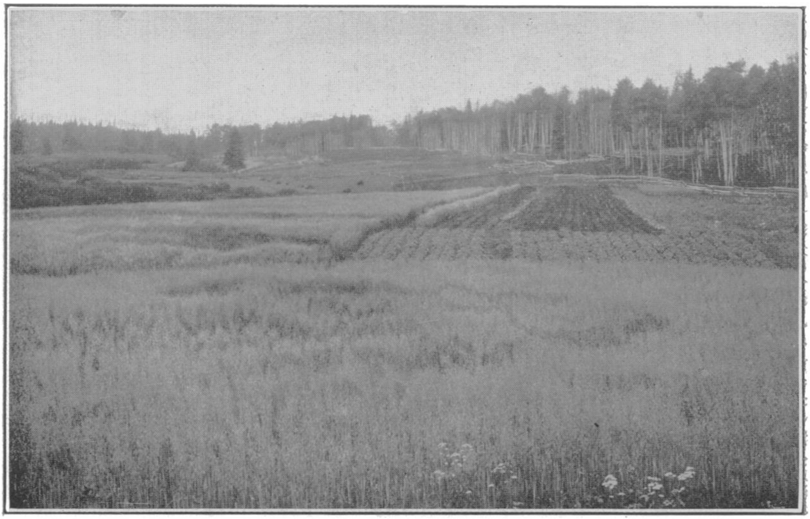

FIG. 2—Oats and barley near Stony Creek, Nechaco Valley, B. C.

The trail crosses the Divide at about 5,000 feet, but the railroad passes the ridge at a lower elevation—3,560 feet—some miles to the north. The descent of the western slopes is somewhat easier, inasmuch as there is a depression having a mean altitude of about 3,200 feet lying between the Divide and the Yellowhead Pass of the Rockies. There are many fertile areas in this district, but they will not be open to the farmer because this district has been set apart by the Dominion Government as a National Park which, with its heavy timber and other primeval characteristics, extends over an area of 5,000 square miles to the western border of Alberta in the Yellowhead Pass. It has been named the Jasper Forest Park. This country was once the home of game, but the Indians have well-nigh depleted the forests of animal life, though it is hoped, by extending protective measures and evicting the Indians, that the remnants will be able to propagate freely, so that the enclosure may again become stocked with bear, lynx, deer, beaver, etc., as well as fowl of all descriptions.

At the point where the Athabaska debouches from the mountains the rift in the foothills is about a mile wide, the waterway occupies the greater part of this space, the main channel is about 600 or 700 feet across, and many sloughs and lakelets constitute the flood-water courses on either side. The river swings along in an north-easterly course at about eight miles an hour, widening at frequent intervals to form large lakes. On the north bank the foothills, almost bare of plants, rise abruptly and the exposed strata are penetrated by many dykes and much folded. The foothills range in height from 5,000 to 8,000 feet, and on the eastern and northern faces are precipitous and bare.

Once the portal is entered, the mountains fall back somewhat, forming a huge amphitheatre in which Jasper Lake is a conspicuous feature. On one side, the lake, which is merely a widening of the Athabaska River, is flanked by the bow-shaped Fiddleback Range, the peaks of which vary from 8,000 to 10,000 feet in height; while on the other sides the mountains rise to about the same altitude.

The entrance to the Rocky Mountains promises to become of importance. High up on the slopes of the Roche à Miette hot springs of therapeutic value, and the hottest so far discovered in Canada, are to be exploited; while on the southern bank of the Athabaska overlooking the Grand Trunk Pacific Railway, a rich bed of coal has been struck. This is evidently an extension of the Brazeau coal field which has been tapped as far south as Calgary, and in greater richness within easy distance of Edson, about twelve miles west of Wolf Creek. In Jasper Park the seams were found a few feet below the surface. The coal is a low grade anthracite similar in character to some coals found in the English fields. It is of excellent calorific value. The seams dip beneath the Athabaska River to reappear upon the northern bank. Some 13 square miles of this coal field have been surveyed, and development work is now under way.

The Athabaska follows a gently winding course between two towering and almost vertical, cliffs. On a wide bench at the foot of the northern cliff the railroad is being built. Majestic mountain scenery is on every hand, the dominating feature being Mount Geikie (11,000 feet), while to the southwest is Simpson Pass, where the Athabaska takes its rise. On the south side, the river is swelled by the Maligne River, flowing from the lake of that name and which for a great part of its distance plunges through a subterranean tunnel, formed evidently by large masses of rock having become detached from the mountain slopes above.

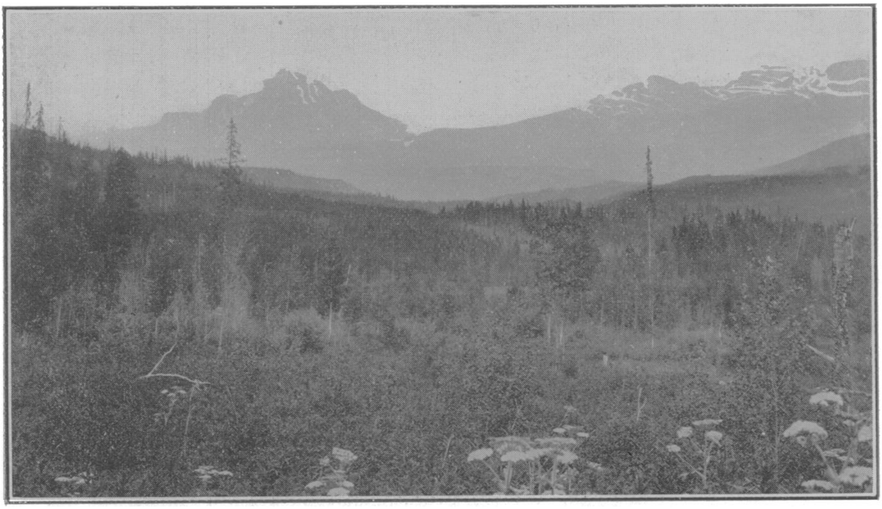

FIG. 3—View of Mount Geikie from the hillside showing the Athabaska and the peaks alongside forming Simpson Pass.

The Athabaska describes a sharp bend to the southeast near the foot of Mount Geikie, and at this point is fed by the Miette River, which comes in from the north, through a narrow defile. An abrupt change in the character of the vegetation was observed to the west of this river. The small jack-pine gave way to the towering bastard Douglas fir, while the flora became distinctly British Columbian in character and variety. In a few minutes we stood in the Yellowhead Pass, which is a gap in the Rocky Mountains 1,000 feet or so in width, at an altitude of 3,720 feet. The Great Divide at this point is so slight that the Miette River, which normally flows southwards to join the Athabaska, in times of flood sends its surplus waters to form a small creek that empties into Yellowhead Lake, so that, seasonally, the river flows both westward and eastward.

The descent from the Pass is gradual through a burnt country with a wealth of wild grass and dense bush. Soon we caught sight of Yellowhead Lake and from the trail around its north shore we had a fine view of Mount Pelée, rising sentinel-like from the wealth of trees on the opposite bank. The lake is an irregular sheet of water and its outlet is a small creek forming one arm of the Fraser River, which, in a mile or so, joins the first arm of that waterway, foaming down the mountain slope on which it takes its rise.

The country along the upper reaches of the Fraser river is scenically grand. The trail and also the Grand Trunk Pacific Ry. follow the northern bank, keeping somewhat towards the foot of the mountains, inasmuch as the land immediately fringing the waterway is marshy, forming a chain of muskegs which are dangerous and difficult to cross and are concealed under a heavy growth of marsh grass. The mountains rise steeply from the southern bank and are clad from water to snow line in timber through which creeks and waterfalls cascade into the Fraser. Numerous creeks rush down the northern slopes into the waterway and at places are treacherous to cross.

The country is extremely diversified. At places the mountains press so closely together as to form merely a gulch, while at other points they roll back leaving wide, long stretches of meadowland, somewhat sodden with water. These verdant alcoves among the mountains are good situations for truck farming, and dairying should prove profitable when town and scenic centers are developed at good points for mountain climbing or for viewing the wonderful scenery. Many of these meadows are quite open and only require slight draining to bring them into productivity. They are saucer-like depressions with the river bank forming the rim. They may easily and cheaply be pierced at intervals to drain off the surplus water, leaving a rich loam of great depth, with which is mingled a vast quantity of natural fertilizer in the form of decayed vegetable matter and mosses.

This district, however, will depend essentially for its prosperity upon its scenic attractions. It is the lake land and mountaineering country of Canada. So far as the waterscapes are concerned, there are the Yellowhead, Moose, and Helena Lakes, all of which are of great length and depth, suited for gasoline launches, while the waters on all sides are hemmed in by lofty mountains, the majority unnamed and constituting virgin ground for the Alpine climber. Foremost among the peaks is Mount Robson, the highest point in the Canadian Rockies, the massive ice-cap of which is at an altitude of 13,700 feet. In the neighborhood are innumerable other lofty peaks rising upwards of 11,000 feet. From the sporting point of view there are endless possibilities. The forests around the base of Mt. Robson teem with bear, especially grizzlies, while the Fraser River, the numerous creeks and lakes abound with fish. One lake we found to be alive with rainbow trout, thirty of which we hooked, in half an hour, with rod and line, scaling up to 15 ounces; and from the Fraser we obained large quantities of trout and Dolly Varden trout.

Between Yellowhead Lake and Mt. Robson the Fraser River is unnavigable even by canoes, for it abounds with rapids, falls, whirlpools and small cañons. At places it is barely 30 feet in width, while at others it widens out to a width of one or one and a half miles. After leaving Mount Robson it becomes wider as, in rapid succession, it is swelled by the South Fork emptying from Lake Helena, Swift Current, and other less imposing creeks. Consequently by the time Tête Jaune Cache is gained it has attained a width of about 350 feet, and hurries along at about seven miles an hour.

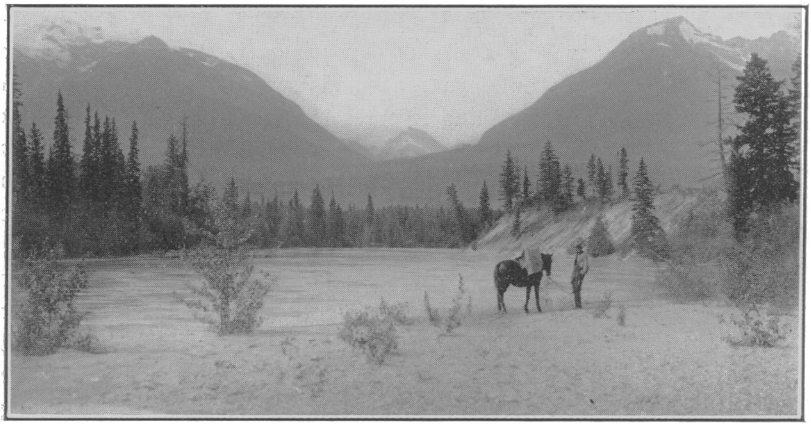

FIG. 4—Tête Jaune Cache. Fraser River in foreground. Mica Mountains behind.

The descent from Mt. Robson to Tête Jaune Cache, some eighteen miles, is somewhat sudden and the configuration of the country is such that the engineers of the railroad found it impossible to adhere to the prescribed grade of 21 feet per mile, so a pusher section had to be introduced to overcome this difficulty. At Yellowhead Pass, the summit of the railroad between the Atlantic and the Pacific seaboards, the track reaches an altitude of 3,720 feet, but in the course of the next fifty miles it drops 1,200 feet, Tête Jaune Cache being at an altitude of 2,524 feet.

At this point, the Rocky Mountains come to an abrupt termination along the river banks and the country opens into a valley about twenty square miles in area. Geographically this is a very interesting point in British Columbia, for standing upon the ridge on the north side of the Fraser River, one looks down not only upon that waterway but also sees the Glennan River, furthermore, the upper part of the Thompson River and the headwaters of the Canoe River, which flows almost due south to join the Columbia.

Tête Jaune Cache is the head of navigation for small draft steamers upon the upper Fraser, there being a clear, good waterway from this point for 470 miles west to Soda Creek. It is also the highest point which the salmon gain when on the run, for the bars and sandbanks in the waterway in the vicinity of the Cache constitute their spawning grounds. Further progress up the river is barred by a fall about 30 feet in height which is naturally beyond the leaping capacity of the fish after their exhausting long run up the river. Large numbers of the fish are caught by the Shuswap Indians living in the vicinity, trappers, and others, the general method of capture being by spearing at night with the aid of a lantern.

At this point, owing to the trail coming to an end, Siwash dugouts were taken in order to reach Fort George; but before embarking upon the second part of the journey, opportunities were given to investigate the arable possibilities of the land in the region of Tête Jaune Cache. A gold prospector had squatted upon a quarter section and had brought a small patch under cultivation, raising lettuce, onions, and other vegetables. The soil is light, sandy loam, easy to work, and eminently adapted for vegetables. The mountain slopes rise in regular benches, and as the whole country has been burned off by forest fires, the preliminary operations are light. The mineral resources are confined at this point to mica, one mountain being named after this material owing to the illimitable quantities of this mineral. The soil indeed for some distance around is heavily impregnated with pulverized mica schist. I was told the mineral was mined fairly easily and that sheets up to twenty-four inches square of white mica had already been obtained. A nickel ore had been found also in small quantities and some excellent specimens of gold ore had been obtained in the neighboring mountains.

Once afloat on the Fraser River we were soon impressed with the velocity of its current and could realize why its discoverer, after whom it is named, christened it the "Bad River," for it demands skilful navigation in an Indian dug-out. Timber jams of huge proportions constitute one of the greatest dangers. Some of the collections of large timber along the shores were over two miles in length. For the first twenty miles the mountains crowd upon the southern bank, a mass of peaks. On the north bank the configuration is somewhat easier, the land sloping up gradually from the water's edge.

The valley through which the Fraser flows is of great width, judging from the distance between the opposing rows of peaks, while the waterway winds from side to side. Its course is roughly northwest for nearly 300 miles and a third of this distance is represented by twists and bends. The railroad, although laid along its bank, at the same time cuts across the chord of the horseshoe bends, so that, though by water the distance from Tête Jaune Cache to Fort George is about 320 miles, by rail, it will be only 210 miles. Some of the loops formed by the river are no less than ten miles around, while by striking across country at the neck of the loop less than half a mile of portage is required.

This part of British Columbia is probably the least known, but it is one destined to occupy a prominent position in the near future. It can only be described as "Nature's Garden," inasmuch as the soil is suited to the production of any root crops, and even bush fruits. The climate is ideal. In summer the thermometer hovers around 80°, but welcome showers temper the heat and bring moisture to the vegetation. The topsoil is an accumulation of decayed vegetable matter up to 24 inches in depth, with an alluvial loam beneath. The possibilities of the soil were shown by the prolific growth of bracken, which grows to a height of five feet with stalks resembling sugar canes.

The timber wealth of this country is illimitable. The lower-lying portions are covered with dense forests of pine in which the Douglas fir predominates, with hemlock, balsam, birch, and, back of the river, are immense groves of cedar, their trunks often having a girth up to thirty feet. For the most part, fire has wrought little damage in these timber reserves, though here and there are bleak stretches of black country, desolated by fire. The timber stretches as far as the eye can reach from the river to the snow lines on the distant mountains. On the lower lying hills the trees have a peculiar emerald green hue, due to the frequent rains. The country,

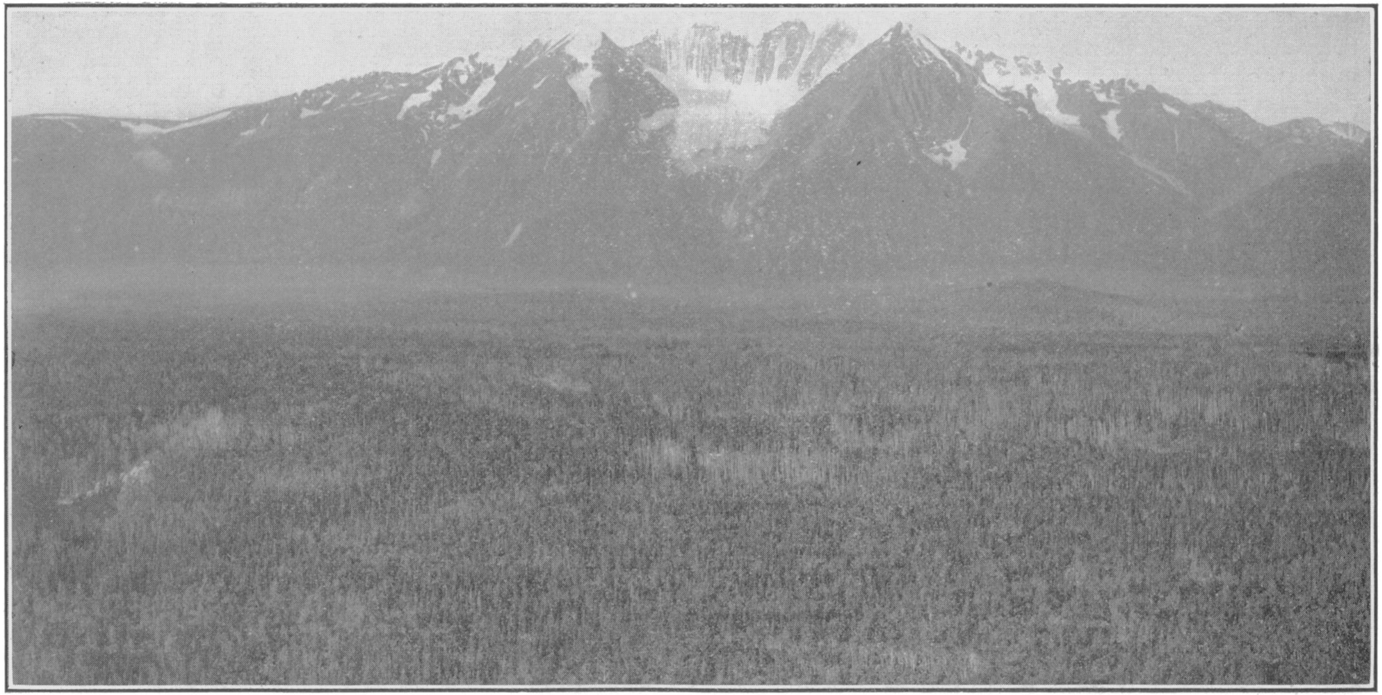

Fig. 5—Hudson Bay Mountain and its noble glacier from five miles distant.

however, is impenetrable for more than a few feet from the water's edge, owing to the density of the forest. This is not surprising, as the country is in its primeval condition. The only way of penetrating the regions back of the river is along the numerous waterways which flow into the Fraser on either side, such as the Shuswap, Beaver, Smoky, Goat, Bear, Willow, and Salmon Rivers and the North Fork of the Fraser, the junction of the latter being about 80 miles north of Fort George.

The country is rich in game of all descriptions, bear being exceptionally plentiful. There are promising strikes of gold on the Rau Shuswap and the Beaver Mountains overlooking the river of the same name. The extent of alluvial gold in the lower reaches of the Fraser has pointed conclusively to the fact that in the higher reaches large deposits of this mineral must exist, but the difficulties and dangers of following up the river have been unfavorable to prospecting upon a methodical scale. The find on the Beaver River is reported to be the best discovery up to the present, and that the deposits must be somewhere in the neighborhood of these mountains is proved by the fact that the Fraser reveals only very slight traces of alluvial gold east of this point. All the creeks and rivulets, however, upon being tested with the pan showed colors.

The railroad leaves the Fraser River at Fort George, which is at the southern edge of the great interior plateau forming New British Columbia, crossing this waterway to pick up the southern bank of the Nechaco River which joins the Fraser at this point, the meeting of the waters constituting a lake. Fort George lies at an altitude of 1,880 feet, and in the course of the next 150 miles the railway makes a gradual climb, running almost due west to Fraser Lake, and then bears towards the north to gain the Skeena River. The Nechaco River follows a somewhat winding course, draining a large tract of low-lying country which was formerly a lake bed, and of which inland sea the Français, Stuart, Fraser and other lakes remain. The Nechaco is the outlet of the Fraser and Français Lakes, while its tributary, the Stuart, drains Stuart Lake. Owing to these lakes being the headwaters of the river, its volume does not vary appreciably, for the lakes act as balancers. The railroad follows the course of the Nechaco, thus traversing the lower lying parts of the country. The soil being alluvium associated with a thick layer of decayed vegetable matter, is extremely fertile, while the subsoil being clay keeps moisture within reach of vegetation. The topsoil varies from two to eight feet in depth. Convincing evidence of the fertility of this soil is supplied by the growth of vetches and wild grasses. Wild timothy tops five feet in height, and averages between three and five tons per acre, while the sugar-cane grass grows to six or seven feet and is rivaled only by the prolific growth of the pea vine. The country has been burned over for the most part, and the second growth of timber comprises merely young cottonwood and willow, which can be cleared easily.

The recurrence of these stretches of meadow constitutes one of the most notable features of the country, and although the altitude is about 2,000 feet, it is considered to be no handicap to any class of agricultural production. Truck gardening, dairying, and cattle raising offer the greatest chances of success. On the whole, the land is too rough to admit of grain raising upon a sufficiently extensive scale to enable machinery to be used, while it is doubtful if the uplands would be suited to grain even if it were practicable. These stretches, on the other hand, as well as the steeper slopes covered with cottonwood, are well suited to cattle raising, inasmuch as the prolific growth of fodder among the trees assures ample sustenance for animals. The equable climate is conducive to this end. The winter is mild and in many places it is possible to keep stock out of doors the year around. This result is due to the full benefit which this region derives from the chinook wind, as the country lies in its path and its influence is felt as far away as the Peace River country. Pioneer settlers who have had some years of experience say the country is of no use to any but experienced farmers carrying on mixed farming. The most successful settlers I met were either British, or Eastern Canadian farmers, and Chinese, the latter being exceptionally successful in truck gardening.

Fort Fraser will probably develop into an important point. At the time of my visit it contained only the Hudson Bay Trading Post, the operator of the Yukon telegraph line, and an Indian village. The Indians are numerous throughout the country, having established large villages, the most important of which are at Fort George, Stoney Creek, and Fort Fraser. They are coast Indians of the Siwash tribe, and, on the whole, are lazy and thriftless. They own the cream of the country and, as their lands comprise the most extensive open areas where grasses grow luxuriantly, the work of tending their stock is reduced to a minimum. In their patches of garden, potatoes looked sickly, but this was due entirely to poor methods and poor seed. At Fort Fraser they were trapping salmon which had made their way up from the Pacific to spawn in the Fraser and Français Lakes. The fish were in fine condition considering their long and exhausting journey, but the yield was small.

The Indians gain a bumper harvest of fish only once in three years, a mystery that is still unsolved.

During the next few years a fleet of shallow-draft steamboats are to be launched on the Upper Fraser River, with headquarters at Fort George and Soda Creek, 150 miles south. As this region has over 1,000 miles of navigable waterways, the waterborne traffic will have considerable importance. On the Fraser there is a clear run of 470 miles between Soda Creek and Tête Jaune Cache, with Fort George as the center, while these vessels can steam up the Nechaco

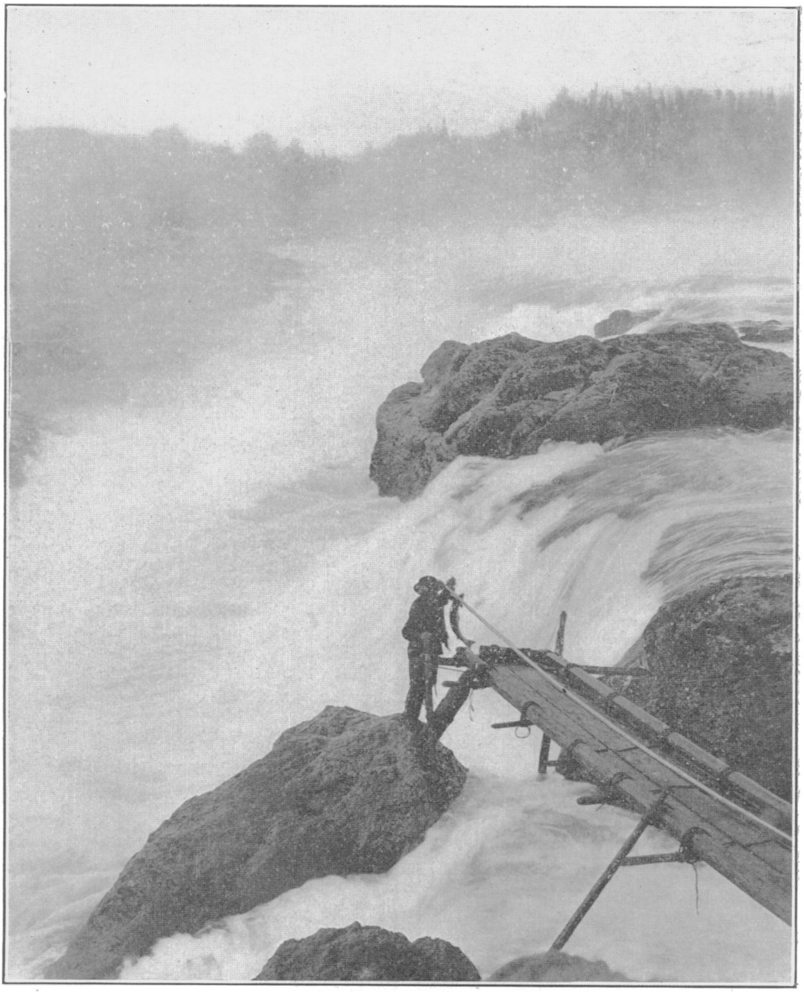

FIG. 6—Salmon fishing on the Bulkley River, Moricetown, B. C.

and Stuart Rivers, into Stuart Lake, and thus keep in touch with the Hudson Bay Post of Fort St. James, or ascend the Nechaco River to Fraser Lake. It is even expected that the smaller craft will be able to make their way into Français Lake, navigating that 70-mile stretch of water from end to end. This will open up the fertile grazing and arable areas of the country surrounding the Français and Ootsabunkut Lakes.

The railroad follows the course of the Endako River (which empties into Fraser Lake), to Burns Lake and then past Decker Lake to pick up the headwaters of the Bulkley River. There is a gradual climb, as the low ridge known as the Bulkley summit has to be overcome, the grade reaching an altitude of 2,366 feet, approximately that of the summit level on the prairie division between Wolf Creek and Winnipeg. Much of the land to the north of the line through this country is not suitable for any branch of agriculture excepting stock raising, as the country is too rough for farm machinery and the hills lead up to the Babine Range. Here and there are promising open spaces, many of which have already been taken up, and excellent results are being achieved.

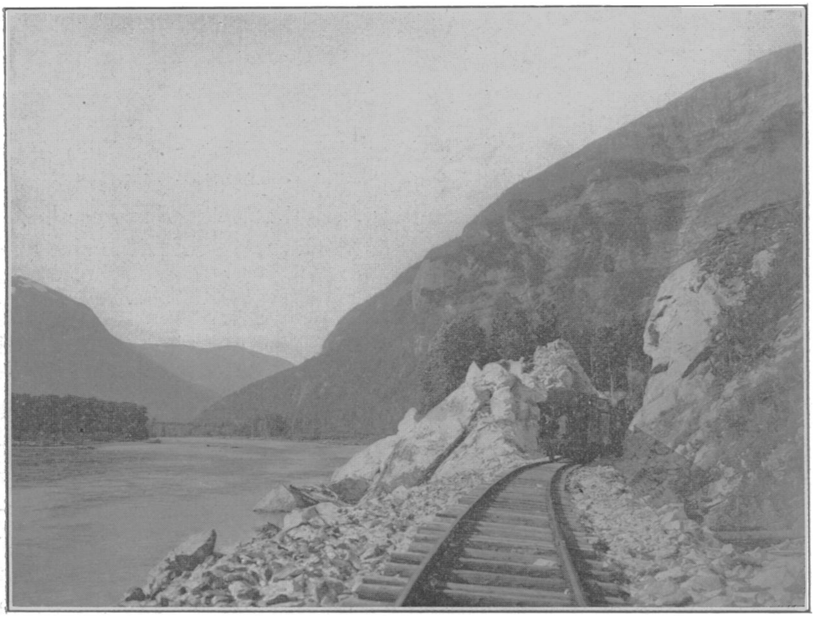

Fig. 7—On the Skeena River, B. C.

But the land which has proved the greatest agricultural surprise is the Bulkley Valley. This depression is low. The railroad descends from the summit to the waterway, this descent continuing in fact for the next 120 miles until the Skeena River is gained. This valley, like the two preceding valleys, is an old·lake bed, with a very thick deposit of alluvium. At the Pioneer Ranch the soil, over an area of 1,000 acres which has been cleared, ranges up to thirty-two feet in depth. Produce grows with exceptional luxuriance, turnips being pulled which measure 36 inches in circumference and weigh 15 pounds; cabbages resembling large bushes; carrots 24 inches in length; parsnips measuring six inches across the crown; and so on. The timothy averages between five and six tons per acre, while the wild timothy, which grew to a height of nine feet, ran about five tons per acre. The oats topped five feet, and though the ranch is surrounded by dense forest, no ill effects appear to be suffered from summer frosts, although the grain was in the milk. The soil was free and worked easily, there being no signs of outcrop of gravel or rock. The cattle were in prime condition, yielding rich milk and fine beef. Wild gooseberries, currants, and strawberries were being cultivated with much success, as the berries were twice the size and of better flavor than those we plucked in the wild state. These conditions prevail throughout the valley and the settlers with whom I conversed expressed complete satisfaction with their situation and fortune.

The Bulkley Valley is limited in area, as the Babine and Coast Ranges run diagonally towards one another and meet at the northern end of the depression. While the Babines protect the valley against the north and east winds, the rifts in the Coast Range permit the free passage of the chinook winds, which accounts for the fact that the snowfall rarely exceeds twenty inches. Indeed, a lesser depth usually prevails, and the melting influence of the warm winds serves to keep the soil mellow and moist. In the summer, when the thermometer ranges between 80° and 90°, warm rains from the west keep the crops in prime condition, affording them refreshment just at the time when they require it.

In this country mining and agriculture will rival one another, for the mountains are rich in minerals. The Babines have yielded excellent strikes of galena and lead, while copper ranging from a low grade ore of 2 per cent. to almost virgin metal of 90 per cent. have been found. Gold is in small quantities, but lead and copper predominate. On the western side of the valley in the Coast Range a rich deposit of coal has been found extending over 25,000 acres. Other strikes of coal have been found throughout this territory, and the abundant supplies of this fuel are of good augury for the mining industry.

To emerge from this valley the railroad tunnels through a shoulder of the mountains, this being the longest tunnel on the whole line—about 3,000 feet. Leaving the mountains the Skeena River is gained at Hazelton, the head of navigation on that waterway and a Hudson Bay post. The line follows the course of the Skeena to the seaboard. In passing to the coast the railroad crosses a region where experiments in fruit culture have proven very promising and it is possible that the Skeena River country will rival the famous Okanagan and Kootenay valleys in southern British Columbia.

The terminus of the road is at Prince Rupert, a natural landlocked bay having an entrance from the broad Pacific a mile in width, with a harbor 11 miles in length.

My own conclusions from an examination of the country is that the center of industrial, commercial, and agricultural activity will move for the most part from southern British Columbia to the north, where the soil is richer, the climatic and physical conditions more attractive, where the winters are mild, and where there is every inducement to develop diversified farming upon an extensive scale. The mineral wealth is great, and the mining regions have the advantage of being in close proximity to farming lands, thus cheapening food supplies.

THE FORCE OF GRAVITY AND METHODS OF MEASURING IT

BY

C. H. SWICK

Coast and Geodetic Survey, Washington, D.C.

In 1665, while watching an apple fall from a tree in his garden, Sir Isaac Newton had the first conception of his great discovery, the law of universal gravitation. He soon after advanced the theory that the attraction between any two bodies in the universe is directly proportional to their masses and inversely proportional to the square of the distance between them, and he afterward proved this theory by computing the attraction between the earth and the moon.

The variation of the force of gravity at different places on the earth was first discovered by Richer in 1672. He transported a